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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,537	08/07/2006	Masaaki Higashida	2006_1185A	8359

52349 7590 09/13/2010  
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EXAMINER
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OH, ANDREW CHUNG SUK

ART UNIT	PAPER NUMBER
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2466

NOTIFICATION DATE	DELIVERY MODE
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09/13/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/588,537	<b>Applicant(s)</b> HIGASHIDA ET AL.	
	<b>Examiner</b> ANDREW OH	<b>Art Unit</b> 2466	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 August 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**1. DETAILED ACTION**

**2. Continued Examination Under 37 CFR 1.114**

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2010/08/03 has been entered.

**4. Response to Arguments**

**5. 35 USC § 103**

6. Applicant's arguments filed 2010/08/03 have been fully considered but they are not persuasive.

7. On p12, the applicant argues that the invention is distinguishable from the prior art because of the claim teaches a first communication device that converts the received Multicast frame into a Unicast frame and transmits the converted Unicast frame to a second communication device based on a communication protocol having a re-transmission processing. The examiner respectfully disagrees and argues that the above limitations are taught by Tomohiko ([0045-0049]: **first transfer apparatus rewrites header of multicast packet to produce unicast packet**) and Sharony ([0053-0057]: **MAC layer retransmission for 802.11 unicast by access point;**

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**wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048]).**

8. On p13, the applicant argues that there is no re-transmission processing for IP multicast frames in the independent claims 1, 15-20. The examiner respectfully disagrees and argues that none of the claims indicate re-transmission processing for IP multicast frames. For example, claim 1 states:

9. “a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a second Communication path, based on a protocol having a re-transmission processing **(the claim appears to indicate that after the multicast packet has been converted to unicast, it is transmitted via unicast using a protocol having re-transmission processing where re-transmission appears to refer to unicast and not multicast)**, and said second communication device includes: a second content receiving unit operable to receive the Unicast frame transmitted via the second communication path from said first communication device based on the protocol having the re-transmission processing **(the second communication device receives the unicast packet and again the re-transmission processing refers to the protocol of the unicast packet, not the multicast packet)**, wherein the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame **(this limitation does not make a clear logical / actual relation between the re-transmission processing and multicast frames).**”

10. Thus, the examiner argues that re-transmission for IP multicast is not claimed.

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11. On p13, the applicant argues that Tomohiko states that it is not appropriate to employ one-to-many communication in the event that transfer apparatuses belong to different domains. The examiner respectfully disagrees and argues that Tomohiko clearly teaches multicasting as is described in the claims (**fig.2, 20, 30**). In addition, the independent claims do not have limitations referring to transfer apparatuses in different domains. The applicant also argues that Tomohiko makes no mention of Unicast including re-transmission. The examiner responds by arguing that Sharony teaches this limitation (**[0053-0057]**) and it would have been obvious to one of ordinary skill in the art to combine both references seeing that Tomohiko and Sharony teach unicasting.

12. On p14, the applicant argues that Tomohiko only discloses communication apparatuses or devices via Unicast. The examiner respectfully disagrees and points to Tomohiko (**fig.2, 20, 30**) as teaching multicasting.

13. On p14, the applicant argues that Tomohiko fails to disclose or suggest converting an IP multicast frame into the unicast frame in which a MAC address of a second communication device is set as an address at a data link layer. The examiner respectfully disagrees and points to Kobayashi (**[0200-0203]**) in the body of the office action as teaching the limitation.

#### **14. Claim Rejections - 35 USC § 101**

15. 35 U.S.C. 101 reads as follows:

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16. Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

17. Claims 15 and 16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The specification in [0099] states that the invention may be characterized in software. In addition, the claims are directed to various devices where the devices are composed of units. Taking the broadest reasonable interpretation, the claims are directed to software per se, which is non-statutory.

**18. Claim Rejections - 35 USC § 103**

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

20. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**21. Claim 1, 8, 9, 13, 15, 16, 17, 19, 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), and further in view of Sharony (US-20040057459), Kobayashi (US-20040158872).**

22. As to claim 1, 15, 16, 17, 19, 20: Tomohiko teaches a communication system, comprising: a first communication device; and a second communication device, wherein said first communication device includes: a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores a content ([0042-0043]: sender transmits multicast packet with data payload to first transfer

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**apparatus**); a conversion unit operable to convert the received Multicast frame into a Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** addressed to said second communication device **([0036], [0048]: unicast packet addressed to second transfer apparatus)**; and a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a second Communication path **([0048-0049]: unicast packet to second transfer apparatus)**, based on a protocol having a ... processing, and said second communication device includes: a second content receiving unit operable to receive the Unicast frame transmitted via the second communication path from said first communication device based on the protocol having the re-transmission processing **(fig.2; [0048-0050]: second transfer apparatus receives unicast packet and converts it into a multicast packet for the receivers)**, ... , the Multicast frame is an IP Multicast frame **(fig.4; [0042]: IP header having group destination address)**, and said conversion unit is operable to convert the IP Multicast frame into the Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)**.

23. Tomohiko may not explicitly teach wherein the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame. However, Sharony teaches wherein the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame **([0053-0057]: MAC layer retransmission for 802.11 unicast by**

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**access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048]).**

24. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses ([0012], [0049]) in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission ([0053-0057]), the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination ([0053-0057]).

25. Tomohiko may not explicitly teach in which a MAC address of said second communication device is set as an address at a data link layer. However, Kobayashi teaches in which a MAC address of said second communication device is set as an address at a data link layer ([0020, 0021, 0149, 0155, 0162, 0203, 0208, 0210]: **convert multicast packet into unicast packet addressed to the client MAC address).**

26. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Kobayashi into Tomohiko since Tomohiko suggests converting data from IP multicast into IP unicast ([0045-0049]) in general and Kobayashi suggests converting data from IP multicast into IP unicast and



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inserting the MAC address for the unicast destination **([0200-0203])**, the motivation being to correctly forward the data packet to its proper destination **([0203])**.

27. As to claim 4: Tomohiko teaches the communication system according to Claim 1, wherein said conversion unit is operable to convert the IP Multicast frame to the Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** in which an IP address of said second communication device is set as an address at a network layer **([0036], [0048]: unicast packet addressed to second transfer apparatus)**

28. Tomohiko may not explicitly teach and the MAC address of said second communication device is set to as the address at the data link layer. However, Kobayashi teaches and the MAC address of said second communication device is set to as the address at the data link layer **([0020, 0021, 0149, 0155, 0162, 0203, 0208, 0210]: convert multicast packet into unicast packet addressed to the client MAC address)**.

29. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Kobayashi into Tomohiko since Tomohiko suggests converting data from IP multicast into IP unicast **([0045-0049])** in general and Kobayashi suggests converting data from IP multicast into IP unicast and inserting the MAC address for the unicast destination **([0200-0203])**, the motivation being to correctly forward the data packet to its proper destination **([0203])**.

30. As to claim 8: Tomohiko teaches the communication system according to Claim 1 further comprising a third communication device which is connected to said second communication device (**fig.2, 201, 211, 212: receivers connected to second packet transfer apparatus**), wherein said second communication device further includes a second content transmission unit operable to transmit a content included in the Unicast frame received by said second content receiving unit to said third communication device (**[0049-0050]: second packet transfer apparatus transmits packets to receivers**), and said third communication device is operable to receive the content transmitted from said second communication device (**[0049-0050]: receivers receive multicast packets**).

31. Tomohiko may not explicitly teach and to provide the received content to a user.

32. However, it is well known in the art that users request and receive streaming multicast content and media through receivers such as personal computers, cell phones, and other devices. It would have been obvious to one of ordinary skill at the time of the invention to have a user operate a receiver and obtain streaming content in order to provide services such as streaming music, video, VOIP, and other types of services to customers.

33. As to claim 9: Tomohiko teaches the communication system according to Claim 8, wherein said second content transmission unit is operable to convert the Unicast frame received by said second content receiving unit into a Multicast frame and to

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transmit the converted Multicast frame to said third communication device **([0049-0050]: second packet transfer apparatus reproduces original multicast packet from received unicast packet).**

34. As to claim 13: Tomohiko teaches the communication system according to Claim 1, wherein said first content receiving unit is operable to receive a Multicast frame which stores a plurality of the contents **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus)**, and wherein said conversion unit is operable to convert the Multicast frame corresponding to the plurality of the contents received by said first content receiving unit into a Unicast frame, in order to store the plurality of the contents into the single Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet).**

35. Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Kobayashi (US-20040158872) as applied to claim 1 above, and further in view of Tomohiko-US (US-20010018714).

36. As to claim 3: Tomohiko teaches the communication system according to Claim 2, wherein said conversion unit is operable to convert the IP Multicast frame to the Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet).**

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37. Tomohiko may not explicitly teach in which an IP address included in the IP Multicast frame is set as an address at a network layer. However, Tomohiko-US teaches in which an IP address included in the IP Multicast frame is set as an address at a network layer (**fig.3, fig.4; [0059-0061]: G1 and S1 are maintained in the unicast and multicast packet**).

38. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Tomohiko-US into Tomohiko since Tomohiko suggests a communication system of converting a multicast packet into a unicast packet (**[0045-0049]**) in general and Tomohiko-US suggests a communication system of converting a multicast packet into a unicast packet where an IP address included in the IP multicast frame is set as the address at a network layer, the motivation being to restore the multicast packet and transmit the packet to the correct destination (**[0064]**).

39. Tomohiko may not explicitly teach and the MAC address of said second communication device is set to as the address at the data link layer. However, Kobayashi teaches and the MAC address of said second communication device is set to as the address at the data link layer (**[0020, 0021, 0149, 0155, 0162, 0203, 0208, 0210]: convert multicast packet into unicast packet addressed to the client MAC address**).

40. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Kobayashi into Tomohiko since Tomohiko suggests converting data from IP multicast into IP unicast (**[0045-0049]**) in

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general and Kobayashi suggests converting data from IP multicast into IP unicast and inserting the MAC address for the unicast destination (**[0200-0203]**), the motivation being to correctly forward the data packet to its proper destination (**[0203]**).

**41. Claim 5, 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Kobayashi (US-20040158872) as applied to claim 1 above, and further in view of Zisapel (US-20030195984).**

42. As to claim 5: Tomohiko teaches the communication system according to Claim 1.

43. Tomohiko may not explicitly teach wherein said second communication device further includes a second content request unit operable to request said first communication device to distribute the content, and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device. However, Zisapel teaches wherein said second communication device further includes a second content request unit operable to request said first communication device to distribute the content (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**), and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

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44. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device ([0045-0050]) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server ([0136-0137]), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing ([0022]).

45. Tomohiko may not explicitly teach and wherein said first content receiving unit is operable to extract from the Multicast frames transmitted via said first communication path a Multicast frame ... and operable to receive the extracted Multicast frame.

46. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast frame being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer apparatus receiving a plurality of multicast packets although Tomohiko teaches a data unit receiving and distributing multiple data packets ([0006]). It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus of Tomohiko (fig.2, 101) as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high quality, also, a single multicast packet would be unlikely to contain enough data to service a sustained exchange.

47. As to claim 10: Tomohiko teaches the communication system according to Claim 8.

48. Tomohiko may not explicitly teach wherein said second communication device further includes: a second content request receiving unit operable to receive the content request from said third communication device; a second content request unit operable to request said first communication device to distribute a content corresponding to the content request received by said second content request receiving unit, and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device. However, Zisapel teaches wherein said second communication device further includes: a second content request receiving unit operable to receive the content request from said third communication device (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**); a second content request unit operable to request said first communication device to distribute a content corresponding to the content request received by said second content request receiving unit (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**), and said first communication device further includes a first content request receiving unit operable to receive the content request from said second communication device (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

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49. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device ([0045-0050]) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server ([0136-0137]), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing ([0022]).

50. Tomohiko may not explicitly teach and wherein said first content receiving unit is operable to extract from the Multicast frames which have been transmitted via said first communication path a Multicast frame which stores the content corresponding to the content request received by said first content request receiving unit, and operable to receive the extracted Multicast frame.

51. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer apparatus receiving a plurality of multicast packets although Tomohiko teaches a data unit receiving and distributing multiple data packets ([0006]). It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus of Tomohiko (fig.2, 101) as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high quality, also, a single



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multicast packet would be unlikely to contain enough data to service a sustained exchange.

**52. Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Kobayashi (US-20040158872), Zisapel (US-20030195984) as applied to claim 5 above, and further in view of Alexander (US-7411901).**

53. As to claim 6: Tomohiko teaches the communication system according to Claim 5 ... said conversion unit is operable to convert the ... of the Multicast frames which have been received by said first content receiving unit and are corresponding to the ... of the contents into Unicast frames ... which have been converted by said conversion unit to the ... of said second communication devices **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet).**

54. Tomohiko may not explicitly teach said first content receiving unit is operable to extract from the Multicast frames which are transmitted via said first communication path Multicast frames corresponding to a plurality of contents corresponding to the plurality of the content requests received by said first content request receiving unit, and operable to receive the extracted Multicast frames.

55. Since the specification does not explicitly mention this particular limitation, the examiner interprets this limitation as a single multicast being taken out of a stream of a plurality of multicast frames. Tomohiko may not explicitly teach a first packet transfer apparatus receiving a plurality of multicast packets although Tomohiko teaches a data

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unit receiving and distributing multiple data packets **([0006])**. It is common knowledge in the art to stream multiple packets in a multicast stream, especially with regards to audio, video, and other media content. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a first packet transfer apparatus of Tomohiko **(fig.2, 101)** as receiving a plurality of multicast packets, the motivation being to support robust audio and video streaming at high quality, also, a single multicast packet would be unlikely to contain enough data to service a sustained exchange.

**56.** Tomohiko may not explicitly teach further comprising a plurality of said second communication devices, wherein said first content request receiving unit is operable to receive the content requests from the plurality of said second communication devices, ... which are addressed to the plurality of said second communication devices which have requested the contents, and said first content transmission unit is operable to transmit the Unicast frames. However, Alexander teaches further comprising a plurality of said second communication devices **(col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device)**, wherein said first content request receiving unit is operable to receive the content requests from the plurality of said second communication devices **(col.4, ln.45-65: multiple unicast streams transmitted at request of receiving device)** ... which are addressed to the plurality of said second communication devices which have requested the contents **(col.4, ln.45-65: multiple unicast streams transmitted at request of receiving device)**, and said first content transmission unit is operable to transmit the Unicast

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frames (**col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device**).

57. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since Tomohiko suggests transmitting unicast streams (**[0045-0049]**) in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment (**col.4, ln.45-65**).

**58. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Kobayashi (US-20040158872), Zisapel (US-20030195984), Alexander (US-7411901) as applied to claim 6 above, and further in view of Lipp (US-6751219).**

59. As to claim 7: Tomohiko teaches the communication system according to Claim 6.

60. Tomohiko may not explicitly teach wherein said first communication device further includes a first content duplication unit operable to duplicate a content requested by the plurality of said second communication devices among a plurality of contents included in the Multicast frames received by said first content receiving unit, and wherein said conversion unit is operable to convert the Multicast frames corresponding to a plurality of the identical contents which have been duplicated by said first content duplication unit into Unicast frames which are addressed to the plurality of said second

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communication devices which have requested the content, and said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices which have requested the content. However, Lipp teaches wherein said first communication device further includes a first content duplication unit operable to duplicate a content requested by the plurality of said second communication devices among a plurality of contents included in the Multicast frames received by said first content receiving unit **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets)**, and wherein said conversion unit is operable to convert the Multicast frames corresponding to a plurality of the identical contents which have been duplicated by said first content duplication unit into Unicast frames which are addressed to the plurality of said second communication devices which have requested the content **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores different destination addresses)**, and said first content transmission unit is operable to transmit the Unicast frames which have been converted by said conversion unit to the plurality of said second communication devices which have ... the content **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores a plurality of destination addresses)**.

61. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko

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suggests converting multicast packets into unicast packets **([0045-0049])** in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency **(col.3, ln.37-49)**.

**62. Claim 11, 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Sharony (US-20040057459), Kobayashi (US-20040158872), Zisapel (US-20030195984) as applied to claim 10 above, and further in view of Lipp (US-6751219), Alexander (US-7411901).**

**63.** As to claim 11: Tomohiko teaches the communication system according to Claim 10 further comprising a plurality of said third communication devices **(fig.2, 211, 212)**.

**64.** Tomohiko may not explicitly teach wherein said second communication device further includes a second content duplication unit operable to duplicate the content requested by the plurality of said third communication devices among a plurality of contents included in the Multicast frames received by said second content receiving unit, and said second content transmission unit operable to transmit a plurality of identical contents which have been duplicated by said second duplication unit to the plurality of said third communication devices which have requested the contents. However, Lipp teaches wherein said second communication device further includes a second content duplication unit operable to duplicate the content ... by the plurality of said third communication devices among a plurality of contents included in the Multicast frames received by said second content receiving unit **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several**

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**unicast packets**), and said second content transmission unit operable to transmit a plurality of identical contents which have been duplicated by said second duplication unit to the plurality of said third communication devices which have ... the contents **(abstract; fig.8; col.4, ln.3-12, 39-45, col.9, ln.36—col.10, ln.64: multicast packet is replicated into several unicast packets; destination field stores a plurality of destination addresses).**

65. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko suggests converting multicast packets into unicast packets **([0045-0049])** in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency **(col.3, ln.37-49).**

66. Tomohiko, Lipp may not explicitly teach requests from plurality of third communications devices. However, Alexander teaches requests from third communications devices **(col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device at request of receiving device).**

67. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since Tomohiko suggests transmitting unicast streams **([0045-0049])** in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment **(col.4, ln.45-65).**

68. As to claim 12: Tomohiko teaches the communication system according to Claim 10 further comprising a plurality of said third communication devices (**fig.2, 211, 212**).

69. Tomohiko may not explicitly teach wherein said second content request unit is operable to request said first communication device to distribute the content. However, Zisapel teaches wherein said second content request unit is operable to request said first communication device to distribute the content (**fig.3f, 135, 145; [0136-0137]: content router forwards requests issued by client to server via router**).

70. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Zisapel into Tomohiko since Tomohiko suggests a first and a second packet transfer device relaying media to client devices from a source device (**[0045-0050]**) in general and Zisapel suggests a first and a second packet transfer device relaying client requests to a server (**[0136-0137]**), the motivation being to provide the content and services on-demand that are desired by the client and to enable load balancing (**[0022]**).

71. Tomohiko may not explicitly teach after receiving all content requests from the plurality of said third communication devices. However, Alexander teaches after receiving all content requests from the plurality of said third communication devices (**col.4, ln.45-65: plurality of devices receiving unicast packets transmitted from a single packet transfer device at request of receiving device**).

72. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Alexander into Tomohiko since

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Tomohiko suggests transmitting unicast streams ([0045-0049]) in general and Alexander suggests transmitting multiple unicast streams to requesting nodes, the motivation being to provide a fast, efficient highly scalable, low cost method of disseminating streaming media in a one-to-many environment (col.4, ln.45-65).

73. Tomohiko may not explicitly teach in a case where the contents requested by the plurality of said third communication devices are identical. However, Lipp teaches in a case where the contents requested by the plurality of said third communication devices are identical (col.2, ln.7-27: **payload that is duplicated is identical for each packet**).

74. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Lipp into Tomohiko since Tomohiko suggests converting multicast packets into unicast packets ([0045-0049]) in general and Lipp suggests duplicating multicast packets into unicast packets, the motivation being to reduce congestion and latency (col.3, ln.37-49).

**75. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), Kobayashi (US-20040158872), Sharony (US-20040057459) as applied to claim 1 above, and further in view of Wesley (US-6076114).**

76. As to claim 14: Tomohiko teaches the communication system according to Claim 1 ... and said first content receiving unit is operable to receive, via said first communication path, the Multicast frame which stores the content ([0042-0043]),



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77. Tomohiko may not explicitly teach wherein said first communication path is a wire. However, Wesley teaches wherein said first communication path is a wire (**col.7, ln.48-67: wired network**).

78. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Wesley into Tomohiko since Tomohiko suggests IP and UDP protocol (**[0042]**) in general and Wesley suggests UDP and IP over wired networks and UDP having retransmission capabilities, the motivation being to overcome problems of latency and data loss in unstable communications environments (**col.7, ln.48-67**).

79. Tomohiko may not explicitly teach based on the protocol having the re-transmission processing. However, Sharony teaches based on the protocol having the re-transmission processing (**[0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048]**).

80. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses (**[0012], [0049]**) in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission (**[0053-0057]**), the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with

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regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

**81. Claim 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tomohiko (EP-1134933), and further in view of Wakai (US-5973722), Kobayashi (US-20040158872), Sharony (US-20040057459).**

82. As to claim 18: Tomohiko teaches a content distribution system for distributing a content ... in the content distribution system, the content distribution system comprising: a first communication device and a second communication device, wherein said first communication device includes: a first content receiving unit operable to receive, via a first communication path, a Multicast frame which stores a content **([0042-0043]: sender transmits multicast packet with data payload to first transfer apparatus)**; a conversion unit operable to convert the received Multicast frame into a Unicast frame **([0045-0049]: first transfer apparatus rewrites header of multicast packet to produce unicast packet)** addressed to said second communication device **([0036], [0048]: unicast packet addressed to second transfer apparatus)**; and a first content transmission unit operable to transmit the converted Unicast frame to said second communication device via a second communication path **([0048-0049]: unicast packet to second transfer apparatus)**, based on a protocol having a ... processing, and said second communication device includes: a second content receiving unit operable to receive the Unicast frame transmitted from said first communication device via the second communication path **([0048-0050]: second transfer apparatus receives**

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**unicast packet)** based on the protocol having the ... processing; and a second content transmission unit operable to transmit the content included in the Unicast frame received by said second content receiving unit **([0048-0050]: restore multicast packet and send contents from second transfer apparatus to receivers) ...**

83. Tomohiko may not explicitly teach to the seat in the content distribution system. However, Wakai teaches to the seat in the content distribution system **(col.17, ln.41-60, col.18, ln.42-54: multicast media to passengers)**.

84. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Wakai into Tomohiko since Tomohiko suggests media distribution to receivers **([0049-0050])** in general and Wakai suggests media distribution in an airplane to passengers, the motivation being to allow passengers the choice of receiving or not receiving a media stream **(col.17, ln.41-60, col.18, ln.42-54)**.

85. Tomohiko may not explicitly teach wherein the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame, the Multicast frame is an IP Multicast frame. However, Sharony teaches wherein the re-transmission processing is performed at a Media Access Control (MAC) layer that is a layer lower than a layer of a communication protocol defining the Multicast frame, the Multicast frame is an IP Multicast frame **([0053-0057]: MAC layer retransmission for 802.11 unicast by access point; wherein Tomohiko teaches the unicast portion having IP / UDP headers in addition to the data link header in fig.5, [0048])**.

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86. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Sharony into Tomohiko since Tomohiko suggests an IP / UDP unicast transmission between two packet transfer apparatuses **([0012], [0049])** in general and Tomohiko suggests a wireless unicast transmission between two wireless devices where the wireless protocol supports retransmission **([0053-0057])**, the motivation being to derive benefits such as a smaller footprint and simplification, and reduced cost from not using expensive wiring; with regards to wireless retransmission, allow the system to recover data in the event that a message fails to reach its destination.

87. Tomohiko may not explicitly teach and said conversion unit is operable to convert the IP Multicast frame into the Unicast frame in which a MAC address of said second communication device is set as an address at a data link layer. However, Kobayashi teaches and said conversion unit is operable to convert the IP Multicast frame into the Unicast frame in which a MAC address of said second communication device is set as an address at a data link layer **([0020, 0021, 0149, 0155, 0162, 0203, 0208, 0210]: convert multicast packet into unicast packet addressed to the client MAC address)**.

88. Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the teachings of Kobayashi into Tomohiko since Tomohiko suggests converting data from IP multicast into IP unicast **([0045-0049])** in general and Kobayashi suggests converting data from IP multicast into IP unicast and

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inserting the MAC address for the unicast destination ([0200-0203]), the motivation being to correctly forward the data packet to its proper destination ([0203]).

### **89. Conclusion**

90. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW OH whose telephone number is (571)270-5273. The examiner can normally be reached on M-F 8:30AM - 5AM EST.

91. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Ryman can be reached on (571)272-3152. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

92. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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95. /A. O./

96. Examiner, Art Unit 2466

/Daniel J. Ryman/

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Supervisory Patent Examiner, Art Unit 2466